For testplan, generated by AI:

**Test Plan Outline**

**2.1 Test Case 1: Minimum Allocation Size (1 Byte)**

* **Test Objective**: Verify how the program handles a minimal memory allocation.
* **Input**: ./HW2-2.exe 1
* **Expected Output**:
  + The program should print a single character (A) followed by a warning about insufficient bytes to form an integer.
  + No segmentation fault should occur.
* **Pass Criteria**: The program runs without errors, and output matches expectations.
* **Output**:

一張含有 文字, 字型, 螢幕擷取畫面 的圖片

自動產生的描述

**2.2 Test Case 2: Small Allocation (10 Bytes)**

* **Test Objective**: Verify behavior with a small memory allocation that is less than the size of two integers.
* **Input**: ./HW2-2.exe 10
* **Expected Output**:
  + The program should fill the memory with A to J and print the corresponding characters.
  + Only one integer should be printed, followed by a warning about remaining bytes (2 bytes left).
* **Pass Criteria**: Output is correct, and the program runs without warnings except for the remaining bytes.
* **Output**:

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自動產生的描述

**2.3 Test Case 3: Memory Allocation of Exact Multiple of 4 (8 Bytes)**

* **Test Objective**: Ensure that when the memory allocation is exactly divisible by the size of an int, the program processes the integers correctly without leaving any leftover bytes.
* **Input**: ./HW2-2.exe 8
* **Expected Output**:
  + The program should fill memory with characters from A to H and print them.
  + Two pairs of integers and their subtracted values should be printed without any warnings.
* **Pass Criteria**: No warnings, correct integer pairs output.
* **Output**:

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自動產生的描述

**2.4 Test Case 4: Large Memory Allocation (100 Bytes)**

* **Test Objective**: Verify the program's behavior when allocating a relatively large block of memory.
* **Input**: ./HW2-2.exe 100
* **Expected Output**:
  + The memory should be filled with A-Z, 1-9, repeated as necessary.
  + The string should be printed correctly.
  + Integer pairs should be printed, and if there are leftover bytes, a warning should appear for the remaining bytes.
* **Pass Criteria**: The string prints correctly, integer pairs match the memory content, and the program gracefully handles any remaining bytes.
* **Output**:

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自動產生的描述

**2.5 Test Case 5: Large Input (Non-Multiple of 4)**

* **Test Objective**: Test if the program handles large inputs that are not multiples of the integer size (i.e., not divisible by 4).
* **Input**: ./pointers 1023
* **Expected Output**:
  + The memory should be filled as described, and the string should be printed correctly.
  + Integer pairs should be printed for as many full int values as possible.
  + A warning about the remaining 3 bytes should be displayed.
* **Pass Criteria**: The string prints correctly, integer pairs print correctly, and the warning about leftover bytes should match expectations.
* **Output**:PASS

**2.6 Test Case 6: Invalid Input (Non-Numeric Input)**

* **Test Objective**: Ensure that non-integer input is handled gracefully by the program (though the program is not designed to handle this explicitly).
* **Input**: ./HW2-2.exe abc
* **Expected Output**:
  + Since atoi("abc") returns 0, the program should attempt to allocate 0 bytes of memory.
  + It should print an empty string with no further output.
* **Pass Criteria**: The program does not crash or produce any erroneous output.
* **Output**:

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自動產生的描述

**3.1 Test Case 7: Allocation of Zero Bytes**

* **Test Objective**: Verify how the program handles an allocation request of 0 bytes.
* **Input**: ./HW2-2.exe 0
* **Expected Output**:
  + The program should print an empty string and no integer output.
* **Pass Criteria**: The program runs without errors or segmentation faults.
* **Output**:

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自動產生的描述

**3.2 Test Case 8: Large Allocation Size (Memory Stress Test)**

* **Test Objective**: Test how the program handles a large memory allocation (e.g., 1 GB) to see if it can handle memory allocation limits.
* **Input**: ./HW2-2.exe 1073741824 (1 GB)
* **Expected Output**:
  + The program should fill memory as described, though output may be truncated due to the large size.
  + No segmentation fault or crash should occur.
* **Pass Criteria**: The program handles large memory allocation without crashing or slowing down significantly.
* **Output**:PASS